The State of Montana's Comments on EPA's Proposed Carbon Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units

Below are the State of Montana's technical comments on the proposed 111(d) rule to lower carbon emissions at existing power plants. The comments are organized into six sections by subject matter rather than importance. We include in parentheses in each comment header a reference to the specific page(s) in the Federal Register or section of the EPA's technical supporting documents to which the particular comment refers.

I. Recommendations for Treatment of Renewable Energy and Energy Efficiency

A. Renewable Electricity Generation vs. Consumption (34896-7)

It is imperative for building block #3 that EPA rely upon renewable electricity generation for reporting compliance with the interim and final emission targets rather than renewable electricity consumption. EPA's 111(d) draft rule uses renewable electricity generation, not consumption (or any metric of renewable energy credits (RECs)), for creating the 2012 baseline renewable electricity figures. These generation-based figures are then extrapolated to create each state's interim and final building block #3 targets.

It is important that EPA recognize that renewable electricity generation and consumption are not the same for states because of the interstate trade in renewable electricity. Some states are net importers of renewable electricity while others, such as Montana, are net exporters. The method for states to comply with the targets should reflect the method for setting the targets. In other words, states should be able to use renewable electricity generation to meet the generation-based target. Alternatively, if EPA intends to rely on renewable electricity consumption for compliance, consumption-based targets should be set.

Approaching compliance with renewable electricity generation is more internally consistent with EPA's proposed 111(d) air quality rule. 111(d) attributes the responsibility for managing large point sources of CO_2 (affected EGUs) to the states where they are located rather than the states where their electricity generation is consumed. As a result, in EPA's draft rule, state CO_2 emissions are calculated using the CO_2 emissions generated by the affected EGUs located in each state without regard to where the resulting electricity generated by the EGUs is consumed. Likewise, EPA's primary proposal for how to treat energy efficiency is that a state can only take into account demand-side energy efficiency measures implemented in the state (or within a multi-state plan region). EPA explicitly created building blocks #1, #2, and #4 to focus on the generation of CO_2 emissions and emission reductions generated within each state. EPA should treat building block #3 the same way for consistency and uniformity as well as fairness across states.

Similarly, according to the draft rule any new nuclear electricity generation undertaken or at-risk nuclear generation retained would be credited to the state where the electricity is being generated, not to the states where the nuclear power plant's electricity is being consumed. To not apply the same standard to renewable electricity as is applied to nuclear electricity, both of which are included in the rule because they are carbon-free energy resources, creates a distortion within the proposed rule's carbon accounting that would unfairly penalize states that export renewable electricity. A further reason for using renewable electricity generation rather than consumption in calculating

building block #3 and in demonstrating compliance with the interim and final emission targets is that the location where renewable electricity is generated is easier to track than where it is consumed and will provide EPA with larger CO_2 emission reduction figures than using state-specific renewable electricity consumption figures.

The U.S. Energy Information Administration (EIA) has very complete and exact data on where renewable generation is located, so tracking the location of renewable generation is very easy. In contrast, total U.S. renewable electricity consumption that is attributable to any one state is, in reality, significantly less than total renewable electricity generation for several reasons. According to the National Renewable Energy Laboratory (NREL), 48.6 million MWh of renewable electricity were voluntarily consumed by residential, commercial, and industrial customers in 2012,[1] but only a portion of this voluntary renewable electricity consumption, roughly a third, was attributable to any one state. Approximately 30 million MWh of renewable electricity consumption, 15% of the total renewable electricity generation in the country in 2012, likely was not attributable to a particular state even though it was officially "consumed."

Much of this discrepancy is because of the unbundled REC purchases of large corporations intended to meet a portion of their total corporate electricity consumption that span many states. In addition, millions of MWh of RECs generated in 2012 are likely to have gone unsold during the year as total renewable electricity generation exceeded 218 million MWh in 2012 but compliance and voluntary renewable electricity markets combined totaled less than 135 million MWh, leaving 83 million MWh of renewable electricity generation unaccounted. Some of this 83 million MWh likely was purchased and "consumed" by electricity providers that are not subject to state RPS regulations but millions of MWh of RECs were also likely banked by electricity providers and REC brokers for RPS compliance or sale in future years. As a result, neither the states, EPA, nor the US Department of Energy have an accurate accounting for how many MWh of renewable electricity were officially "consumed" in 2012, both nationally and for individual states. Without knowing exactly what renewable electricity consumption in each state was in 2012, EPA lacks a firm basis for projecting what achievable levels of renewable electricity consumption will be for each state between 2020 and 2030. In addition, REC markets can be complicated as some electricity consumers buy and consume energy bundled with RECs, others just buy the RECs while consuming other electricity, while others buy the RECs in order to retire them without any electricity consumption (such as environmental groups). This could lead to many difficult challenges in tracking RECs and determining which states have claim to the avoided carbon emissions associated with them.

Even if it is assumed that EPA could effectively quantify a baseline for renewable electricity consumption in each state, every state's building block #3 target will need to be recalculated if EPA continues to rely upon renewable electricity consumption for compliance in the final rule instead of generation. The reason for this is to account for the discrepancy between each state's renewable electricity generation and consumption. In addition, the national total amount of reported renewable electricity in 2012 will have to be revised downward to account for the disparity between reported 2012 renewable electricity generation and 2012 renewable electricity consumption. The smaller

[1] NREL. 2013. *Status and Trends in the U.S. Voluntary Green Power Market (2012 Data).* http://www.nrel.gov/docs/fy14osti/60210.pdf.

baseline 2012 renewable electricity consumption figures for the states will result in smaller 2020-2030 renewable electricity consumption figures and a smaller reported reduction in total CO_2 emissions for building block #3 (unless EPA also increases its renewable electricity growth assumptions).

The State of Montana is also concerned that potential federal requirements for demonstrating compliance with 111(d) rules based on renewable electricity consumption will preempt state renewable portfolio standard rules, which typically vary considerably from one state to the next. It will not be possible for EPA to honor the RPS rules for each state while maintaining a coherent national policy regarding what renewable electricity is eligible for use in compliance with 111(d). As a result, states and utilities will have a strong incentive to revise their renewable electricity procurement strategies towards those strategies that comply with both state RPS and federal 111(d) rules, effectively preempting state-specific RPS rules that were put in place to reflect the specific interests and goals of that state.

In addition, there is the potential for the development of clean energy resources, such as incremental hydro upgrades at existing dams, to be used for compliance with 111(d) while not being eligible for compliance with state RPS programs. As a result, the eventual consumer of this electricity may not be known nor would any RECs be generated by the facility or purchased and retired by an electricity consumer. A perfect example of this already exists in Montana, where PPL Montana completed a capacity expansion at its Rainbow Dam in 2013, increasing its nameplate capacity from 35 MW to 60 MW. However, the incremental electricity generation from Rainbow Dam's 25 MW of additional capacity is not considered an eligible renewable energy resource under Montana's RPS and Rainbow's increased electricity sales are sold as null power on the wholesale market alongside PPL Montana's other electricity generation. Montana can clearly take credit for the incremental generation from the Rainbow Dam upgrade if 111(d) compliance is based on where renewable electricity generation occurs. Unfortunately, it's unclear what state would be able to take credit for Rainbow Dam's incremental electricity generation if 111(d) compliance is based on the procurement and consumption of renewable electricity or RECs. In others words, state RPS programs and 111(d) may be inconsistent in terms of verification and accounting.

B. Renewable Electricity and Energy Efficiency Accounting (34919-22)

EPA must ensure that the equation that states use to calculate their emission rate for compliance with EPA's 111(d) interim and final targets is also the same equation EPA uses to calculate each state's interim and final emission rate targets. EPA has requested comment in numerous places within the draft rule and TSDs about how CO_2 emission reductions from renewable electricity generation and energy efficiency savings should be factored into calculating a state's CO_2 emission rate. The State of Montana recommends EPA continue to use the draft rule equation, treating each MWh of renewable electricity and energy efficiency savings as one MWh of emission free electricity.

The alternative of requiring states to attribute a specific amount of avoided CO_2 emissions to each MWh of renewable electricity and energy efficiency, potentially requiring different avoided CO_2 emission figures for renewable electricity and energy efficiency savings generated at different times of day, month, or year, would place an unreasonable compliance burden on states. Modeling marginal electricity generating units within a state or region is a complicated, time-intensive, and expensive proposition. Even EPA, which has considerably more resources than most state

environmental departments, does not release its eGRID estimates every year and only estimates annual, regional marginal emission rates for key pollutants rather than more detailed state- or time-specific marginal emission rates.

Moreover, accounting for avoided emissions as a result of renewable electricity and energy efficiency presents a significant double counting issue for avoided emissions that occur in another state. Given the interconnectedness of the electricity grid in the continental U.S., the impact of renewable electricity generation and energy efficiency savings are likely to be felt across an entire region, not just within the state where the renewable electricity was generated or energy efficiency investments were made. As a result, if a state is to claim avoided emissions and generation that occurred in another state, in order to avoid double counting, the other state must report an increase in its carbon emissions and generation that did not actually occur within the state. But because every state will be investing in renewable electricity and energy efficiency that will have regional impacts, what will result is an immensely complicated system of carbon emission and electricity generation trading between states in which every state's emissions and generation figures will be augmented in order to account for every other states' activities. This is a recipe for an accounting, reporting, and regulatory nightmare that will be grossly inefficient, prone to miscalculations and double counting, and more likely to create antagonism between states than to foster partnerships. Because of this, EPA should not base state compliance for renewable electricity and energy efficiency on demonstrations of avoided emissions. Instead, EPA should continue to use the accounting methodology used in the draft rule that credits renewable electricity and energy efficiency as zero emissions sources of electricity.

However, if EPA determines in its final rule that the equation states must use to demonstrate compliance with their interim and final CO_2 emission rate targets needs to be revised from what has been proposed in the draft rule, then EPA must also use the revised equation to recalculate each states' interim and final CO_2 emission rate targets. To do otherwise would be to potentially require some states to achieve emission rate targets that would necessitate far more investment in carbon reduction strategies than the EPA is assuming through their target-creating building blocks.

If EPA opts to account for renewable electricity generation and energy efficiency savings by requiring states to model avoided emissions, EPA must make it clear that states are allowed to take credit for avoided emissions that occur out of state as a result of a state's renewable electricity generation and energy efficiency investments so long as states use reasonable and verifiable methods for determining carbon emission impacts. The avoided carbon emissions that result from increased renewable electricity generation and energy efficiency investments are real but, because of the interconnectedness of regional electricity grids, are likely to occur across many states. Limiting state credit to only in-state avoided emissions under the modeling approach would limit the credit a state receives to only a fraction of the real avoided emissions that resulted from a state's investments in renewable electricity and energy efficiency.

C. Alternative Renewable Energy Goal (34869-70)

EPA should not use the alternative method for calculating building block #3 that it is outlined in the Alternative RE Approach Technical Support Document (TSD). The alternative approach, which relies on estimating building block #3 based on the technical and market potential for renewable electricity in each state, is flawed because it does not take into consideration transmission and grid

balancing constraints. Many regions of the country with significant technical potential for renewable energy generation lack the necessary transmission capacity necessary to deliver the renewable electricity generation to areas of significant electric load. As a result, EPA's alternative approach overestimates the economic potential for developing more remote areas of significant renewable energy potential.

Under the alternative approach, Montana would have a goal of generating eight times as much renewable electricity in 2029 as it did in 2012, which would be equivalent to generating enough renewable electricity to meet 74% of Montana's 2012 retail electricity sales. Such a result is impractical, both technologically and economically, especially if EPA decides to require renewable electricity to be consumed in the state in order to demonstrate compliance. Given that a large percentage of Montana's electricity generation and consumption comes from hydroelectricity, EPA's alternative renewable electricity goal would actually exceed the percentage of the state's retail electricity consumption that is generated from fossil fuels.

If EPA is to use technical and market potential to estimate a state's renewable electricity generation potential, it should use a regionalized approach, like the one described in the October 28th Notice of Data Availability (NODA). However, in-state electricity demand and out-of-state transmission capacity will still need to be factored into a regionalized technical and market potential target in order to avoid the mistakes made in the Alternative RE Approach TSD.

D. Regionalized Renewable Energy Target (NODA §III.B.2)

The State of Montana is unable to take a position in favor or against EPA's alternative proposal raised in Section III.B.2 of the October NODA regarding a regionalized approach to setting state renewable energy targets without first understanding what the potential renewable energy targets are for Montana between 2017 and 2030. However, if EPA opts to use the alternative approach outlined in Section III.B.2 of the October NODA in conjunction with a compliance methodology based on renewable energy consumption and RECs instead of renewable electricity generation, then each states' share of the regional renewable energy target should be based on retail sales in the state rather than generation. To set the goals based on total generation would fail to address the concern expressed by many states, and recognized by EPA, that the draft rule could potentially saddle renewable electricity exporting states with more aggressive renewable energy targets than renewable electricity importing states.

If EPA opts to use the regionalized renewable energy target methodology outlined in Section III.B.2 of the October NODA, EPA should favor the creation of larger regions, such as North American Electric Reliability Corporation (NERC) regions, for setting regional renewable energy targets to better capture the significant amounts of electricity, and in particular renewable electricity, that travel long distances from their generating source to their eventual purchaser and consumer. If selected, the regionalized approach to setting state renewable electricity targets should be applied to all renewable electricity generation, both existing and new, in order to reflect that purchasers of existing renewable energy generation are often not in the same state that the electricity is generated in and that this is likely to continue to be the case going forward with future renewable energy developments.

EPA should not incorporate existing hydropower generation into the alternative regionalized renewable electricity target methodology outlined in Section III.B.2 of the October NODA. The inclusion of existing hydropower will only add further complexity or variability to the renewable energy targets, particularly in any smaller geographic regions where good and bad hydro years could create boom and bust renewable electricity years for the entire region.

E. Changing Relationship Between Building Blocks #3 and #4 and building block #1 (NODA §III.C)

EPA should not implement either of the alternative proposals for changing the accounting of building blocks #3 and #4 mentioned in Sections III.C.1.a and III.C.1.b of the October NODA. EPA's primary proposal in the June draft rule is an oversimplification of the electricity sector because it implicitly assumed that increased renewable electricity and energy efficiency generation are used to offset future increases in electricity generation from existing fossil generating units. However, it's a superior option to the alternatives proposed in Section III.C.1 of the October NODA.

It would be a mistake for EPA to interpret increases in renewable energy and energy efficiency generation as decreases in generation from existing fossil generation for the setting of state carbon emission rate targets without also incorporating electricity generation growth into the model. There is little proof that either renewable electricity generation or energy efficiency reduces generation from existing power plants. Instead, both resources are more likely to avoid increases in electricity generation from fossil fuel-fired power plants.

Likewise, it would be a gross oversimplification of the electricity sector to assume that new renewable energy and energy efficiency generation can offset fossil generation on a one-to-one basis because of the different characteristics of the resources. For instance, most renewable energy generation is variable depending upon the natural resource being utilized and is not dispatchable, limiting its ability to completely replace most coal and natural gas combined cycle generation that operates as baseload electricity generation. Similarly, the impacts of energy efficiency are typically felt differently throughout the day, depending upon the type of efficiency measure implemented and when during the day and year it has the most impact on electricity consumption.

Using either alternative proposal from Section III.C.1 would require EPA to tailor assumptions for each state to anticipate what percentage of future electricity consumption growth would be met from existing electricity generating units in a business as usual scenario, which would vary from state to state depending upon a number of factors. EPA would also need to develop state-specific assumptions for how much renewable energy and energy efficiency generation would be able to offset fossil generation in the state and/or region. The end result would be a significantly more complex methodology for determining a state's interim and final emission rate targets that would likely not be significantly different from the draft rule targets nor would they be any better an approximation of the impact of the proposed Clean Power Plan for existing generating units than the draft rule. EPA should stick to the simple methodology used in the draft rule for how to treat building blocks #3 and #4.

F. Renewable Energy Cap (34868)

The State of Montana appreciates EPA's proposal to cap the amount of new renewable electricity generation assumed in in each state's building block #3 target so that the new renewable electricity generation target in building block #3 does not exceed the electricity generation from the existing affected EGUs in the state. Placing a cap on new renewable energy generation in a state will help ensure that EPA does not set renewable energy targets for states that cannot be supported by the state's electricity grid.

G. Hydroelectric Dam Upgrade Eligibility Clarification

EPA's draft rules are vague regarding the earliest date an incremental dam upgrade project that increases the electricity generating capacity of a dam could be completed and still have the incremental capacity portion of the dam considered a renewable electricity facility eligible to be used for compliance with the 111(d) targets. EPA should be clear that incremental nameplate capacity increases at existing hydroelectric dams completed after December 31, 2012 are eligible to be used for compliance with 111(d) targets.

H. Energy Efficiency Growth (34875)

EPA should not exceed the annual energy efficiency savings rate of 1.5% of retail sales and the incremental improvement in annual energy efficiency savings of 0.2% per year. These goals are already very aggressive for rural states like Montana and will be a significant challenge for such states to achieve.

An annual first-year energy efficiency savings of 1.5% of retail sales is more than double the current energy efficiency being achieved in Montana. Achieving EPA's energy efficiency goal for the state will require significant effort to redesign existing energy efficiency programs, develop new programs, and scale the overall energy efficiency sector in a matter of just a few years. Additionally, funding sources to more than double the funds being devoted to energy efficiency will need to be identified.

Achieving a first-year energy efficiency savings of 1.5% of retail sales would be a significant challenge for Montana. Any higher rates of energy efficiency savings would be difficult to cost-effectively achieve in such a short period of time for rural states like Montana. It is also important to note that almost one half of Montana's energy consumers receive their electricity from cooperatives and private electricity suppliers that do not currently have significant energy efficiency programs, so new program infrastructure would have to be enacted. Rural states like Montana need additional time to develop the necessary energy efficiency programs to achieve the EPA's energy efficiency targets.

I. Challenge of Rural, Small Electric Coops (34887, 34947)

Most small and/or rural coops, municipal utilities, and competitive electricity suppliers in Montana do not currently consume significant percentages of renewable electricity and do not operate or participate in programs to promote energy efficiency, with the exception of a few western Montana coops that purchase most or all their power from the Bonneville Power Administration. These small electricity providers represent half of the retail sales of electricity annually in Montana and are not regulated by the state's Public Service Commission. As a result, it will be more challenging to grow the procurement of renewable electricity and energy efficiency by small electricity providers along

the same trajectory as larger utilities in urban states, or even the expected average size electric utility. These small electricity providers lack the existing institutional structures for the procurement of renewable electricity and energy efficiency. EPA should revise its building block #3 and #4 methodologies to take into account the more limited resources of smaller electricity providers.

Additionally, Montana's Renewable Portfolio Standard (RPS), as is the case with many state RPS programs, does not apply to electric coops, municipal utilities, or small competitive electricity providers. As a result, EPA's methodology for determining the growth in renewable electricity in the various regions of the country overestimates the potential growth in renewable electricity by ignoring the often significant percentages of total state retail sales that are not subject to state RPS programs or other requirements to procure specific percentages of retail sales from renewable resources. EPA should rerun its building block #3 calculations to take into account the portion of state retail electricity sales that do not have to comply with a state's RPS requirements.

J. Early implementation (34919)

EPA should allow energy efficiency savings generated from the early implementation of EPA-compliant energy efficiency programs to receive at least partial credit towards states' interim targets. Verifiable energy efficiency savings that exceed a state's 2012 baseline energy efficiency savings or EPA's 2017-2019 building block #4 energy efficiency percentages should be eligible to be banked and used for compliance with EPA's interim target. Crediting states for early energy efficiency implementation provides an important incentive that will encourage states to be proactive in adopting aggressive energy efficiency programs and will achieve EPA's intended goal of reducing carbon emissions from the electricity sector. Early implementation of energy efficiency is also desirable for the EPA because it will provide greater certainty that states are making the appropriate progress to achieve their carbon emission rate reduction targets.

K. Energy Efficiency Export-Import Adjustment (34897)

EPA should not pursue its proposed alternative of providing a multiplier for energy efficiency achieved by electricity-exporting state. Rewarding electricity-exporting states with a multiplier for energy efficiency achieved in-state carries with it an implication that neighboring electricity-importing states are pursuing similar levels of energy efficiency. However, because of the potentially divergent incentives for pursuing energy efficiency as a means of compliance with EPA's proposed 111(d) plan between electricity-importing and exporting states, such an assumption is potentially incorrect. Consequently, there is no guarantee that the additional energy efficiency credits an electricity-exporting state would get were actually being generated in other, electricity-importing states. EPA should continue to use the methodology for energy efficiency accounting embodied in the draft rule's primary proposal and equation.

L. Evaluation, Measurement and Verification (EM&V) Guidance (34909, 34913, 34921)

EPA must provide greater guidance on the parameters states should use in developing EPA-approved EM&V measures for energy efficiency. However, EPA should remain cognizant of the need to balance greater guidance with maintaining flexibility in order to allow states to develop their own state-appropriate methods. The State of Montana requests that EPA provide further guidance

on what types of energy efficiency might be considered to have prescriptive/deemed energy savings that would require less rigorous EM&V standards.

II. Recommendations Related to Baseline Year and Implementation of Building Blocks #1 & #2

A. Baseline Year (34895-6)

The State of Montana disagrees with EPA's determination in the proposed rule that using 2012 electricity generation alone is the best method for estimating a baseline for state electricity generation and carbon emissions from affected EGUs and other electricity generators. Price fluctuations in fuels, poor or good resource years, maintenance schedules and plant breakdowns, and overall economic activity are just a few of the potential reasons one individual year might not be appropriate as an approximation for the current status of electricity generation in a state.

For Montana, as with many states, 2012 was not an average year for electricity generation. Electricity generation, and resulting carbon emissions, from affected EGUs was approximately 30% below average. Using such a low electricity generation year as EPA's baseline year for compliance will increase the difficulty of Montana achieving compliance with the interim and final carbon emission rate targets by requiring proportionally more renewable electricity and energy efficiency, in addition to the already aggressive targets, to account for projected electricity generation growth at affected EGUs. Likewise, creating a carbon emission mass target based off the carbon emission numbers in 2012 would be even more problematic as significantly higher electricity generation, and resulting carbon emissions, is expected from the state's affected EGUs for the years between 2013 and 2030 than was seen in 2012. Reducing carbon emissions at Montana's affected EGUs below their carbon emissions in 2012 is improbable, even with significant heat rate improvements at affected EGUs and investments in increased energy efficiency and renewable electricity generation.

As is mentioned in the October NODA, EPA should utilize a multi-year average of at least three years or permit states to select and justify the use of the most representative years from the last ten in order to calculate the baseline electricity generation and carbon emissions for each state. Increasing the flexibility in the baseline will allow the rule to better account for state carbon emission variations resulting from the recent economic recession and to better capture the variability of existing hydroelectricity generation.

In addition, using a multi-year average or other flexible year selection process will better account for normal year operations and allow for some recognition of recent EGU heat rate and other capital improvements that may have reduced EGU carbon emission rates in the years directly prior to 2012. Utilizing the carbon emission rate from only 2012 creates overly strict building block #1 targets for states that have seen significant reductions in the carbon emission rate of their affected fleet of EGUs in recent years.

B. Phase-in for Building Blocks #1 and #2 (NODA §III.A)

EPA should apply an incremental approach to factoring the carbon reductions associated with building blocks #1 and #2 into the interim target rate for each state, as it does with building blocks #3 and #4, rather than EPA's primary draft rule proposal of having all carbon emission rate reductions associated with building blocks #1 and #2 occur in 2020. EPA provides little justification

in the draft rule to ground its assumptions that it is feasible for states to implement a 6% carbon emission rate improvement at affected EGUs and increase natural gas combined cycle power plant capacity factors to 70% by 2020. Since the draft rule has been proposed, power plant operators, electric utilities, state energy offices, and other knowledgeable stakeholders have been nearly uniform in their concern that states and power plant operators would not be able to implement building blocks #1 and #2 before 2020, or at one time. Given the overall size of the electricity sector, and the tremendous amounts of capital needed to make even small shifts in power plant efficiency or hours of generation, such an abrupt shift in electricity generation operations is economically and operationally infeasible, and may not even be technically possible.

Instead of factoring all the carbon emission rate reductions associated with affected EGU efficiency improvements and coal-to-natural gas fuel switching into the pre-2020 time period, EPA should follow a similar schedule to what it implemented for building blocks #3 and #4. Under such a format, affected EGU efficiency improvements and coal-to-natural gas fuel switching is assumed to increase at a set rate between 2017 and 2029, ultimately achieving the intended carbon emission rate reductions in 2029 rather than 2020. Notably, this approach leaves EPA's final carbon emission rate targets for each state unchanged while easing state interim targets in order to allow states more time to implement cost-effective operational changes and upgrades at coal and natural gas power plants. This also provides greater leeway for some fossil fuel burning power plants to live out their useful lives before retirement.

As is noted in the October NODA, providing a more gradual process for substituting coal generation with natural gas is especially important given the scale of carbon emission reductions associated with building block #2 in many states. If states with significant redistributions of coal to natural gas generation are not able to completely achieve the shift forecast in the draft rule by EPA for 2020, they have very limited alternate options for achieving a similar scale of carbon emission rate reductions. Switching large amounts of coal-fired electricity generation to natural gas could adversely affect grid reliability, ancillary services, and balancing authority's abilities to meet peak loads if implemented too quickly. Additionally, long-term contracts from affected EGUs could be compromised with a 2020 deadline for fuel switching. A longer glide path through 2029 would at least mitigate some of the adverse impacts from building block #2.

Alternatively, EPA could split the carbon emission reductions associated with building blocks #1 and #2 in half, implementing half the 6% carbon emission rate improvement at affected coal EGUs and half the coal-to-natural gas generation shift assumed for each state in 2020 while the second half could be implemented in 2025 or another year. Setting the interim year carbon emission rate targets in this manner would achieve the same goal as the State of Montana's primary recommendation, providing greater leeway for states to find cost-effective means of reducing their carbon emission rates while leaving the final 2030 carbon emission rate targets for each state unaffected.

C. Natural Gas Combined Cycle (NGCC) Capacity Factor of 70% (34866)

While Montana does not have any existing or proposed NGCC plants, the State of Montana feels that a target capacity of 70 percent is very high and that EPA should re-evaluate their assumptions when setting the 70 percent goal and potentially lower the target for some or all NGCC power plants. Historically, natural gas prices are highly volatile and increased use of natural gas for electricity generation is constrained by transmission capacity, particularly in the U.S. Northeast.

While the economics for increased natural gas generation are favorable presently, the history of natural gas prices in the U.S. has shown that current natural gas price trends can shift rapidly and unpredictably. By creating goals for states to increase their natural gas consumption, EPA is only increasing the likelihood of potential steep natural gas price increases that would be passed on to ratepayers across the country as higher electricity prices. Furthermore, the more electricity that is natural gas fired, the greater would be the effect on ratepayers of a steep increase in natural gas prices.

Likewise, not all NGCC power plants were designed to operate at a 70 percent capacity factor and not all NGCC plants have access to natural gas supplies at all times, further limiting their potential generation. For states with only a few NGCC power plants, achieving an average capacity factor of 70 percent may be overly optimistic.

In many states, EPA has assumed that increased generation from NGCC power plants will decrease coal-fired electricity generation in the state significantly and potentially to zero. This assumption disregards the reality that electricity is not just about generating megawatt-hours but is also about generating capacity and meeting electricity demand every second of every day. EPA is incorrect in assuming that many states will be able to meet peak electricity demand without operating their coal-fired power plants. Likewise, issues with grid boundaries that run between jurisdictions can also pose problems. For example, increasing the amount a natural gas plant runs in one part of a state under one jurisdiction may not be compatible with lowering the amount a coal plant runs in another jurisdiction (a different balancing authority, RTO, or even grid). As such, EPA should reconsider its assumption that all states will be able to achieve a NGCC capacity factor average of 70% and take into consideration the particular circumstances of each state (i.e., natural gas pipeline capacity, NGCC power plant design, total state generating capacity, and peak electricity demand) when setting each state's building block #2 target.

D. Minimum Building Block #2 Amount (NODA §III.B.1)

The State of Montana strongly disagrees with the proposed alternative mentioned in Section III.B.1 of the October NODA to create an assumed minimum amount of re-dispatch from coal to natural gas generation for every state. Creating a floor for the impact of building block #2 would completely ignore the existing circumstances of states with little to no existing natural gas combined cycle electricity generation. Such a floor would be completely arbitrary and ignores the many technical and economic reasons why a state might not have any existing or future plans to utilize natural gas combined cycle technology.

E. Incorporating Natural Gas Co-Firing into Targets (NODA §III.B.1)

EPA should continue to allow the co-firing of natural gas at existing steam generation plants to be eligible as a mechanism for states to include in their implementation plans and to achieve reductions in existing power plant emission rates and/or emissions. However, EPA should not include natural gas co-firing as a potential factor in the setting of each state's building block #2 targets as is proposed in Section III.B.1 of the October NODA. The ability and potential cost of co-firing natural gas with existing coal and other fossil fuel-fired power plants is highly dependent upon the particular characteristics of an individual power plant. For a few power plants, co-firing natural gas would require little to no capital upgrades to the facility while other power plants could potentially

require capital upgrades that would have costs measured in the hundreds of millions of dollars. The same variance in feasibility and cost is also true for the relative proximity and availability of natural gas to existing power plants that do not currently utilize natural gas.

As such, EPA would not be able to apply a simple methodology to every state for what percentage of existing coal, oil, and other fossil-fuel generation could be met in the future with the co-firing of natural gas. Instead, EPA would need to analyze each fossil-fuel fired power plant individually to determine the feasibility and economic cost of implementing natural gas co-firing at each facility. Conducting a suitably analysis for a single power plant would take weeks to months of in depth analysis from a broad array of market experts and engineers. Conducting such an analysis for hundreds of power plants would take years and tremendous manpower. The proposed alternative is impracticable within EPA's given timeline.

F. 6% Heat Rate Improvement (34860, 34862)

A six percent heat rate improvement at existing coal-fired power plants is an overly aggressive heat rate improvement for states to achieve by 2020 and should not be raised further. The State of Montana's discussions with EGU operators in Montana since the draft rule was published suggest that a six percent heat rate improvement is unlikely to be cost-effectively achieved at some, if not all, of the affected EGUs in Montana. This is especially true considering that recent heat rate improvements at those affected EGUs will not count toward the six percent if they were done before 2012. As a result, additional reductions in the carbon emission rate will need to be generated from fuel switching, renewable electricity, energy efficiency, and other options available to the state. Any increase to building block #1 would only exacerbate the discrepancy between EPA's proposed heat rate improvement and what is achievable in Montana, further driving up compliance costs for the state while potentially failing to deliver any further carbon emission reductions.

III. Recommendations Related to Eligible Fuels and Technologies

A. Hydro Year (34869)

EPA is mistaken in assuming that by excluding existing hydroelectric generation from consideration in the rule that variability in annual electricity generation from existing hydro facilities will not create problematic levels of variability in the electricity generation from fossil-fuel fired power plants from one year to the next. This is especially the case in regions of the country where hydroelectric generation represents a significant percentage of total electricity generation. For Montana, a good hydro year can generate as much as twice the electricity from dams located in the state as during a bad hydro year. In good hydro years, fossil fuel-fired power plants, which are primarily coal plants in Montana, operate less while they operate significantly more in bad hydro years.

Key to the potential validity of EPA's proposed rule, 2012 was a good hydro year for the Pacific Northwest, which in turn significantly depressed electricity generation from affected coal and natural gas facilities across the broader region, including in Montana. EPA's implicit assumption in setting each state's emission rate goal is that hydro generation in future years will reflect generation in 2012. This assumption is overly optimistic for Montana and the greater Pacific Northwest. Future years' electricity generation and carbon emissions for Montana's affected EGUs are likely to be significantly higher than they were in 2012, in part because Montana's hydroelectric generation in

2012 was more than 1,300 GWh more than the state's 2003-2012 10-year average. The 1,300 GWh of above average hydro generation in 2012 is equal to almost 5 percent of the state's total generation in 2012.

As has been noted in Section II, EPA should use a multi-year average to determine baseline electricity generation for affected EGUs as well as existing hydroelectricity generation.

B. Integrated Gasification Combined Cycle (IGCC), Carbon Capture and Sequestration (CCS,) and new Natural Gas Combined Cycle (NGCC) Eligibility (34923-4)

EPA should continue to allow measures outside the four building blocks to be used for complying with the interim and final emission rate targets so long as the avoided carbon emissions are measurable, enforceable and verifiable. While CCS and IGCC technology was determined to be more expensive than other carbon reduction alternatives, the current cost of such technologies is not a guarantee that they will always be more expensive and does not consider that states may have additional, non-monetary metrics for evaluating which programmatic and technological options they will deploy in order to achieve their target carbon emission rate reductions. Defining eligible methods of reducing carbon emission rates as broadly as possible, while still affirming that verifiable carbon emission rate reductions are being achieved, will maintain the program's flexibility and will help states ensure that they have access to the lowest cost options available for achieving compliance with EPA's target carbon emission rates as well as other alternatives that states may deem to be in their interest to pursue.

Likewise, EPA should allow states to use generation from new gas-fired power plants in demonstrating compliance with a state's carbon emission rate target. As is noted above, permitting additional flexibility will help states achieve EPA's target reductions in emission rate at the lowest cost and with the least impact on grid reliability.

C. Treatment of Cogeneration Facilities (34924)

EPA should consider the use of cogeneration technologies as an eligible resource for states to use in reducing their carbon emission rates. However, EPA must provide additional guidance for how carbon emissions from cogeneration facilities should be calculated. It is important that the carbon emissions and carbon emission rate be calculated based on the percentage of total cogeneration facility energy used that is directed to electricity generation. The percentage of carbon emissions associated with thermal energy used at a cogeneration facility should not have to be reported and should not be used in calculations for the cogeneration facility's or the state's carbon emission rate.

D. Cogeneration Facility Reporting (34914)

The State of Montana does not support reporting both the electrical generation and the useful thermal output for cogeneration facilities. This is not a fair reporting burden on cogeneration facilities when other facilities that produce thermal energy, but not electricity, are not counted. Additionally, given the small number of cogeneration facilities, the additional effort in recordkeeping provides very little benefit in driving down CO_2 emissions.

IV. Recommendations Related to Rule Flexibility and Compliance Plans

A. Rate- to Mass-Based Goal (34912)

The State of Montana's main concern with the development of a mass-based goal is the recognition by EPA that "growth" needs to be incorporated into a mass-based goal. The growth assumption for a state like Montana needs to incorporate the fact that growth occurs not only within the state but also as growth in the export of electricity to other states. Montana does not feel that one methodology can accurately be described by EPA for all states in converting from a rate-based to a mass-based goal.

EPA must understand that the Technical Support Document developed for illustrative purposes for rate- to mass-based conversion penalizes states that are net exporters of electricity. Montana, in developing its own rate-to mass-based tool, fully expects that growth will also occur in demand for that portion of the electricity generated in the state that is exported. Therefore, EPA must maintain flexibility for states to propose approaches where all generation in the state increases and not just electricity used for in-state demand. EPA must also realize that this exported electricity demand could be satisfied with Montana generation by either EGU MWhs or by renewable generation and therefore, Montana disagrees that new renewable generation necessarily replaces EGU MWhs. As long as the rate or equivalent mass target is satisfied through the energy mix, the state plan should be satisfied.

B. Multi-State Plan Guidance (34899)

EPA should provide further guidance about the parameters for how permissible multi-state plans can be organized and the necessary rules for demonstrating regional compliance with aggregated emission rate targets, including guidance on how best to avoid double counting of avoided emissions. However, EPA should not seek to prescribe a specific structure for a multi-state plan, allowing states the flexibility to organize their plans in whatever manner best suits the members of the multi-state region.

The potential cost savings associated with multi-state compliance plans is a potential justification for states to seek regional cooperation for compliance but should not be considered by EPA in setting individual state emission rate targets. State cooperation in regional compliance partnerships is strictly optional and should not be considered the default option for compliance.

C. Multiple State Plan Flexibility (34910)

EPA should permit states to segment their state into separate groups, either geographic or economic, and create multiple compliance plans for each segment so long as the aggregated set of compliance plans meets the state carbon emission rate reduction goals, or equivalent mass emission reductions, set by EPA. Because Montana straddles the divide between the Western and Eastern U.S. electricity grids, it may make sense for the state, and others like it, to develop two separate compliance plans for the EGUs on the two separate electricity grids. Likewise, it may make sense for the portion of Montana that lies on the western electricity grid to participate in a multi-state compliance plan with other western states while the portion of the state that falls on the eastern electricity grid might participate in a multi-state compliance plan with Midwestern states. Such flexibility could potentially be very useful for states and electricity generators to generate cost-

effective carbon emission rate reductions. Such partial state compliance plans should be approvable by EPA so long as states can demonstrate that each partial state plan contributes appropriately to the states overarching compliance with EPA's goals.

Additionally, EPA should permit states to participate in regional compliance plans that are specific to particular types of resources or building blocks. For instance, Montana should be able to participate in a regional renewable energy compliance plan (while keeping the other parts of its plan separate) so long as the portion of the region's renewable energy generation that can be claimed by Montana is clearly articulated in the regional plan and is not double counted by another state inside or outside the region.

D. Alternative Proposal (34892)

The State of Montana prefers EPA's primary proposal of an interim average goal extending from 2020 to 2029 and a final goal beginning in 2030 over the alternative proposal of an interim goal extending from 2020 to 2024 and a final goal beginning in 2025. The longer timeline for compliance provides greater flexibility while also delivering greater carbon emission rate reductions that will further promote a more sustainable society and generate greater environmental benefits.

E. State Plan Considerations for non-affected EGUs (34913)

EPA must provide the maximum flexibility for states to use non-affected EGUs to achieve compliance with 111(d) targets. States should be permitted to determine what the least cost methods are for achieving the emission rate reduction targets set by EPA.

V. Recommendations for Implementation Plans and Compliance Reporting

A. State Plan Submission Timeline

Given the complexity of the EPA proposed 111(d) rule for regulating carbon emissions at existing power plants, EPA should provide additional time between release of the final rule and the initial submission deadline for state plans. One year will not be enough time for states to digest the final rule, once announced, and effectively develop a state plan with the myriad of stakeholders within each state, especially considering states may need to work with state legislatures and regulatory organizations within the state to develop enforceable mechanisms for implementing a state's plan.

The State of Montana recognizes that EPA has provided states with the opportunity to request extensions to the state plan deadline of one and two years depending upon whether the state is developing a state-specific or multi-state plan, but those extensions represent the bare minimum amount of time that states will need to finalize state plans. Montana's state legislature convenes biannually. The next legislative session will occur January through April 2015, which is well before a final rule will be available. Following the anticipated June 2015 publication of a final rule, the legislature will not meet again for a regular session until January 2017, which is after the initial state plan deadline. Montana would not have sufficient time to develop a state implementation plan should any legislative action be necessary. If states run into complications in developing implementation plans, additional time beyond the extension period will be necessary. EPA should set the primary submission deadline for state plans at two years from the announcement of the final rule rather than the current proposal of one year.

B. State Plan Revision Process

EPA needs to outline a formal process for states to revise their state implementation plans once they have been approved by EPA. Between 2017 and 2030, many things will change within the electricity sector. Technologies for reducing a state's carbon emission rate that are not currently cost-effective may, by 2030, become not only competitive with existing technologies but may become the least cost options for reducing carbon emissions. Likewise, market developments may significantly change the makeup of a state's electricity generating sector in unpredictable ways before 2030. EPA should outline a process for states to submit revised implementation plans for EPA approval so that states can continue to optimize their implementation plans to account for technology and market changes that occur over time. Further, state compliance should be determined by whether states have achieved the carbon emission targets outlined in their approved implementation plans, not whether states have achieved their carbon emission targets in the manner originally set out in their implementation plans.

C. Reporting Frequency and 2-Year Averaging (34913-4)

EPA should require states to provide updates on the progress of carbon emission reduction programs and initiatives on a reasonable schedule. The report should not be required more frequently than every two years.

D. State Goals (34917)

When economic conditions have substantially changed, states should be able to incorporate such changes into revised state 111(d) plans to more accurately reflect program costs and performance. Along the same lines, if growth assumptions have resulted in underestimating CO_2 emissions due to robust economic activity, states should be eligible to revise state plans as necessary to reflect current conditions. This is particularly true for establishing mass-based emission targets for 2020-2030.

E. Deficient Performance and Corrective Measures (34907, 34908)

EPA should set the trigger for requiring corrective measures by a state at higher than the proposed 10 percent limit for annual deficient performance. Montana's output from affected utilities has varied by more than 20 percent in recent years because of a maintenance shutdown at one of the large coal-fired generating units in one year and a large hydro runoff event in another year. Therefore, sometimes nature (e.g. weather patterns) or mechanical failure can lead to natural variations greater than 10% from what was expected. Such events should not trigger the implementation of corrective measures.

Likewise, the State of Montana believes that the proposed alternative of an 8 percent limit on a state's deficient performance is too low of a trigger point and much too restrictive.

The State of Montana believes the final 2030 goal should be the most important target; how states reach that goal is less important. The State of Montana recognizes that corrective action measures are important but also would request the final rule provide for states to update their plan during the interim period as conditions and earlier assumptions change.

F. Conditional Approval of Implementation Plans (34916)

EPA should have authority to conditionally approve the state plan while remanding the non-compliant components of the plan back to the state for further revision and subsequent review and approval by EPA.

VI. Miscellaneous Comments

A. State Plan Template (34917)

EPA's suggestion of creating a state plan template would not hurt states and could help streamline EPA's approval process. However, the template should not be prescriptive and must ensure that ample flexibility for states is still allowed.

B. Gross vs. Net Generation (34894)

Goals and reporting requirements for existing EGUs should be expressed in Net Generation.

C. Incorrect Data on Page 4-22 and 4-24 of GHG Abatement Measures TSD

On page 4-22 of the GHG Abatement Measures TSD, the renewable electricity numbers shown in Table 4.6 for Montana are incorrect for all years and do not match the numbers used elsewhere by EPA. For instance, in 2030, Montana's renewable electricity target should be 2,723 GWh rather than the 2,848 GWh shown in the table. The renewable energy percentage numbers for Montana in Table 4.7 on page 4-24 are also incorrect (most likely because they are using the MWh numbers from Table 4.6).